

REMARKS

This amendment is being filed with a request for continued examination in the above-identified application. The request for continued examination follows an Advisory action issued by the Examiner on February 28, 2003. In the advisory action, the Examiner refused to enter an after final amendment filed on February 19, 2003 on the basis that the amendment would raise new issues, i.e. addition of the residual sulfur content in claim 1, which would require further search and/or consideration.

Applicant's invention is directed to a process for hydrodesulphurising a kerosene and/or a gas oil cut to a residual sulfur content of less than 30 ppm weight, as recited in claim 1. Claim 1 defines an element of the processes which is the residual sulfur content of the kerosene and/or a gas oil cut. The processes defined by the claims with respect to the results achieved are so far removed from methods disclosed in the prior art that they are unobvious. The remaining defined elements of the processes are unchanged. Further, the quantity of catalyst used in the first step of the process is about 5 to 40% by weight of the total quantity of catalyst used in the process. Clearly, there is a significant and notable difference between the process as disclosed in WO 96/17903 and Applicant's process as observed in the amounts of sulfur content in the final gas oil product. The lowest amount of sulfur obtained in the oil of the WO '903 process was about 60 ppm, while the amount of sulfur in the final gas oil product of the instant invention was on the order of 10-30 ppm (see Examples 4 and 5 of the instant invention). Moreover, the arrangement of catalyst which yielded the lowest amount of sulfur in the final product of the WO '903 disclosure was a 50:50 volume ratio distribution as described above. By contrast, Applicant's invention utilizes a quantity of catalyst that is about 5 to 40% by weight in the first step of the total quantity of catalyst used in the process.

As previously argued, WO 96/17903 discloses a hydrodesulfurization process for a hydrocarbon feedstock comprising supplying the feedstock to distinct hydrotreatment zones. First and second hydrotreatment zones each contain a charge of a sulphided hydrotreatment catalyst. The first hydrotreatment zone causes hydrodesulfurization of the feedstock which includes aromatics and organic sulfurous impurities.

WO '903 discloses several examples with two stage hydrotreatment which demonstrate the amount of residual sulfur obtained with the hydrodesulfurization process. A review of the two stage hydrotreatment examples would reveal that two major plant configurations were used as relates to the placement of the catalyst charge between the two hydrotreatment zones. Either a 25:75 volume ratio or a 50:50 volume ratio was utilized (page

39, third paragraph). Careful review of the hydrotreatment conversion ratios obtained using the different volume ratios would reveal that a 50:50 volume ratio actually yielded the lower amount of residual sulfur in the oil in line 166. Compare for example the residual sulfur in the oil in Examples 6, 7, and 8. In Example 6 wherein the diesel feedstock is supplied as in Figure 2 (using a 25:75 volume ratio), the amount of residual sulfur in the oil is 99 ppm. In Example 8, using a 25:75 volume ratio, the amount of residual sulfur in the oil is 111 ppm. By contrast, in Example 7, using a 50:50 volume ratio wherein the feedstock is supplied as in Figure 3, the amount of residual sulfur in the oil is 75 ppm. Similarly, a comparison of residual sulfur levels obtained in Examples 15-17 would reveal that a 50:50 volume ratio yielded the lowest residual sulfur in the oil. Examples 15 and 17 utilized a 25:75 volume ratio which yielded residual sulfur levels of 68 ppm and 113 ppm, respectively. Example 16 which utilized a 50:50 volume ratio yielded a residual sulfur level of 62 ppm. This data clearly demonstrates that the optimal distribution of catalyst between the two zones is about 50% catalyst in each of zones 1 and 2.

As explained in Applicant's response of February 19, 2003, one of ordinary skill in the art reading the WO 96/17903 disclosure would not have been motivated to select a distribution of catalyst quantities as recited in claim 1 of the instant invention with the goal of obtaining the lowest amount of residual sulfur in the final gas oil product. In fact, the '903 disclosure would actually teach away from Applicant's claimed process. Examination of the data gathered in the different Examples disclosed in WO '903 would suggest that a 50/50 distribution of catalysts between the two hydrotreatment zones would in fact yield the optimal distribution. Applicant's invention clearly provides an unexpected advantage as seen from Examples 3-5.

Where there is no adequate teaching or suggestion or motivation in a prior art reference to modify the process to arrive at the claimed process, there can be no proper legal basis for obviousness, *In re Laskowski et al* (CAFC 1989) 871 F.3d 115, 10 PQ2d 1397. Further, the teachings of the '903 disclosure would actually teach away from the present invention, therefore, there is a clear legal basis for withdrawal of the rejection of the claims under §103.

In view of the above remarks, favorable consideration is courteously requested. However, if there is any remaining issues which can be expeditiously resolved by a telephone conference, the Examiner is courteously requested to telephone the undersigned at the number indicated below.

The Commissioner is hereby authorized to charge any fees associated with this response or credit any overpayment to Deposit Account No. 13-3402.

Respectfully submitted,

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